Exercise: Files and Streams

This document defines the **exercises** for the "Java Advanced" course @ Software University. Please submit your solutions (source code) of all below described problems in Judge.

1. Sum Lines

Write a program that reads a text file and prints on the console the sum of the ASCII symbols of each of its lines. Use **`BufferedReader`** in combination with **`FileReader`**.

Examples

Input	Output
On January 1 , 1533 , Michael Angelo, then fifty-seven years old, writes from Florence to Tommaso de' Cavalieri, a youth of noble Roman family,	1452 1397 2606 670 1573 2028 2762
Two households, both alike in dignity, In fair Verona, where we lay our scene, From ancient grudge break to new mutiny	1508 2062 1360 2125 1876 1848

Hints

- Use try-with-resources to handle file

```
try () {

} catch (IOException e) {
    e.printStackTrace();
}
```

- Create a **`BufferedReader`** to read each line of the file

```
try (BufferedReader reader = Files.newBufferedReader(Paths.get(inputPath))) {

} catch (IOException e) {
    e.printStackTrace();
}
```

- Get the ASCII code of each character in the line and add it to the sum for the current line and print the sum on the console

```
String line = reader.readLine();

while (line != null) {
    long sum = 0;
    for (char c : line.toCharArray()) {
        sum += c;
    }

    System.out.println(sum);
    line = reader.readLine();
}
```

2. Sum Bytes

Write a program that reads a text file and prints on the console the sum of the ASCII symbols of all characters inside of the file. Use **`BufferedReader`** in combination with **`FileReader`**.

Input	Output
On January 1 , 1533 , Michael Angelo, then fifty-seven years old, writes from Florence to Tommaso de' Cavalieri, a youth of noble Roman family,	12488
Two households, both alike in dignity, In fair Verona, where we lay our scene, From ancient grudge break to new mutiny	10779

Hints

- You can modify your solution to the previous problem
- Use a type that will not overflow like **`long`** or **`BigInteger`**

3. ALL CAPITALS!

Write a program that reads a text file and changes the casing of all letters to upper. Write the output to another file.

Examples

Input	Output
On January 1 , 1533 , Michael Angelo, then fifty-seven years old, writes from Florence to Tommaso de' Cavalieri, a youth of noble Roman family,	ON JANUARY 1 , 1533 , MICHAEL ANGELO, THEN FIFTY-SEVEN YEARS OLD, WRITES FROM FLORENCE TO TOMMASO DE' CAVALIERI, A YOUTH OF NOBLE ROMAN FAMILY,
who afterwards became his favourite pupil: "If I do not possess the art of navigating the sea of your potent genius, that genius will	WHO AFTERWARDS BECAME HIS FAVOURITE PUPIL: "IF I DO NOT POSSESS THE ART OF NAVIGATING THE SEA OF YOUR POTENT GENIUS, THAT GENIUS WILL

Hints

- Use **`BufferedReader`** and **`PrintWriter`**.

4. Count Character Types

Write a program that reads a list of words from the file **input.txt** and finds the count of vowels, consonants and punctuation marks. Assume that:

- **a, e, i, o, u** are vowels
- All others are consonants
- Punctuation marks are (**!,.?**)
- Do not count whitespace.

Write the results to another file.

Examples

Input	Output

`Thanks to us, you owe it to the Chinese.`	`Vowels: 13`
	`Consonants: 17`
	`Punctuation: 2`

Hints

- Use **`BufferedReader`** and **`PrintWriter`**.

5. Line Numbers

Write a program that reads a text file and inserts line numbers in front of each of its lines. The result should be written to another text file.

Examples

Input	Output

`Two households, both alike in dignity,`
`In fair Verona, where we lay our scene,`
`From ancient grudge break to new,`
`Where civil blood makes civil hands.`
`From forth the fatal loins of these two`
`A pair of star-cross'd lovers take their life;`
`Whose misadventured piteous overthrows`
`Do with their death bury their parents' strife.`
	`1. Two households, both alike in dignity,`
	`2. In fair Verona, where we lay our scene,`
	`3. From ancient grudge break to new,`
	`4. Where civil blood makes civil hands.`
	`5. From forth the fatal loins of these two`
	`6. A pair of star-cross'd lovers take their life;`
	`7. Whose misadventured piteous overthrows`
	`8. Do with their death bury their parents' strife.`

6. Word Count

Write a program that reads a list of words from the file words.txt and finds how many times each of the words is contained in another file text.txt. Matching should be case-insensitive.

Write the results in file results.txt. Sort the words by frequency in descending order.

Input	Output
Two thou shall see	Two - 30 shall - 22 thou - 19 see - 13

7. Merge Two Files

Write a program that reads the contents of two text files and merges them together into a third one.

File 1	File 2	Output
1 2 3	4 5 6	1 2 3 4 5 6

8. Get Folder Size

Write a program that traverses a folder and calculates its size in bytes.

Input	Output
Location: D:\Files-and-Streams Size: 486 bytes (486 bytes)	Folder size: 486

9. Copy a Picture

Write a program that makes a copy of a **.jpg** file using **`FileInputStream`**, **`FileOutputStream`**, and **`byte[] buffer`**. Set the name of the new file as **picture-copy.jpg**.

10. Serialize Array List

Write a program that saves and loads an **`ArrayList`** of doubles to a file using **`ObjectInputStream`** and **`ObjectOutputStream`**. Set the name of the file as **`list.ser`.**

11. *Serialize Custom Object

Write a program that saves and loads the information about a custom object using **`ObjectInputStream`** and **`ObjectOutputStream`**.

Create a **simple class** called "Course" that has a **String field** containing its **name** and an **integer field** containing the **number of students** attending the course. Set the name of the save file as **`course.ser`.**

12. *Create Zip Archive

Write a program that reads three **.txt** files and creates a zip archive named **files.zip.** Use **`FileOutputStream`**, **`ZipOutputStream`**, and **`FileInputStream`.**